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Age distribution of strata-bound ore deposits in the Japanese accretionary complexes and its implication for mineral dep

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We report the age distribution of strata-bound ore deposits in the Japanese accretionary complexes. These deposits are mainly divided into three types; umber (Fe-Mn), Mn-rich, and volcanogenic massive sulfide (VMS; Besshi-type). The Mn-rich deposits are further divided into two subtypes that are associated with greenstone and NOT associated. Ages of these deposits provide us important constraints for a secular change of marine redox condition over the past 360 Myr. Depositional ages of umber and Mn deposits were previously determined by microfossils including radiolarians and conodonts. On the other hand, ages of the Besshi-type deposits are determined by Re-Os method. Oxide ore deposits such as umbers and Mn deposits related to hot-spot volcanism very likely precipitated in the modern-style oxygenated deep-sea. In contrast, Mn carbonate and VMS deposits likely precipitated in the stagnant, O₂-deficient deep-sea during the Triassic and Jurassic periods. The age distribution of strata-bound ore deposits in the Japanese accretionary complexes gives us a hint for exploring mineral deposits on modern seafloor.

Keywords: strata-bound ore deposit, marine redox condition, umber, Besshi-type (volcanogenic massive sulfide), Mn deposit, submarine mineral deposit